



Comprehensive Textbook of Medical Microbiology & Immunology

This review spots the ‘Comprehensive Textbook of Medical Microbiology & Immunology’, edited by three eminent and senior teachers of Microbiology, published by Joykoli publications limited, Dhaka, Bangladesh in December 2023. The book offers a timely and well-scaffolded voyage from foundational principles to clinical applications of the discipline. It has been clearly customized to undergraduate learners while remaining useful for postgraduates seeking rapid refreshers. The scope is impressively broad yet purposeful. By organizing content across bacteriology (general and systemic), virology, and immunology with added chapters on practical bacteriology, clinical microbiology, vaccines, and transfusion immunology, the text aligns closely with undergraduate competencies while remaining valuable for rapid postgraduate review. The book is a well-structured, contemporary, and pedagogically sound resource that bridges foundational science with clinical application, particularly through its coverage of core workflows and recent developments such as SARS-CoV-2 updates and antimicrobial resistance priorities.

Scope and structure

The textbook organizes its content coherently across bacteriology, virology, and immunology, with dedicated chapters for practical bacteriology, clinical microbiology, vaccines, and transfusion immunology, aligning with recognized MBBS competency frameworks and undergraduate outcomes in Microbiology curricula. This arrangement mirrors competency-based medical education (CBME) emphases on etiology, diagnostics, infection control, and stewardship, indicating intentional scaffolding from mechanisms to management.

Audience and utility

Primarily designed for undergraduate medical students, the clear explanations of the text, supported by diagram summaries meet CBME goals for

interpreting tests, selecting antimicrobials rationally, and applying infection prevention principles, while its succinct overviews also serve postgraduates seeking rapid consolidation of fundamentals and bench-to-bedside workflows. The availability of a comprehensive, institutionally archived first edition further supports adoption for core course use and faculty integration in structured teaching programs.

Immunology coverage

The Immunology coverage is broad and practice-oriented, spanning core concepts through clinical applications such as vaccination and transfusion immunology, and mapping to undergraduate competencies in modern medical curricula. Innate and adaptive immunity are presented with emphasis on cells, receptors, cytokines, and complement, establishing how these systems integrate to clear pathogens and regulate responses. Antigen recognition, clonal selection, and effector mechanisms of B and T cells are outlined to connect molecular principles to protective immunity and immunopathology. Hypersensitivity types I–IV, autoimmunity, and immunodeficiency (primary and secondary) are covered with diagnostic principles to support differential diagnosis and lab workups. Principles of vaccination, immunization schedules, contraindications, and adverse events are linked to clinical counseling and programmatic competencies expected of new graduates per EPI-aligned frameworks. Transplantation antigens, graft rejection mechanisms, and immunomodulation are taught alongside transfusion reactions and compatibility testing, supporting safe blood product use. Antigen–antibody reactions and immunoassays (e.g., agglutination, ELISA, immunofluorescence) are connected to routine diagnostic workflows and quality practices in clinical labs.

Virology coverage

The Virology coverage is comprehensive and clinically anchored, spanning general principles

through DNA/RNA virus families, diagnostics, therapeutics, prevention, and outbreak control, aligned to undergraduate competency frameworks in microbiology curricula. General virology introduces virion structure, classification, replication cycles, cell entry and egress, tropism, cytopathic effects, and host range, building a mechanistic base for disease understanding. Outcomes of infection—acute clearance, persistence/latency, oncogenesis, and immunodeficiency—are tied to viral manipulation of host pathways and immune responses. Systematic coverage includes clinically important DNA viruses (e.g., herpesviridae, adenoviridae, papovaviridae, parvoviridae, poxviridae) and RNA viruses (e.g., orthomyxoviridae, paramyxoviridae, picornaviridae, flaviviridae, retroviridae, coronaviridae), emphasizing epidemiology, pathogenesis, clinical features, and control.

Contemporary pathogens are contextualized with SARS-CoV-2 updates on structure, transmission, pathogenesis, immune response, variants and vaccines, supporting current practice readiness. Diagnostic virology integrates specimen selection and timing, transport media, direct detection (antigen tests, DFA), culture and cytopathic observation, nucleic acid amplification (PCR/RT-PCR), and quantitative viral load monitoring, with guidance on interpretation and quality assurance. Therapeutic principles cover classes and mechanisms of antivirals and resistance mechanisms.

Vaccinology includes live-attenuated, inactivated, subunit, vector, and mRNA platforms with indications, contraindications, schedules, and adverse event monitoring, bridging preventive practice with counseling competencies. Transmission dynamics, isolation precautions, post-exposure prophylaxis, outbreak investigation, surveillance, and reporting are integrated to meet curricular expectations for IPC and public health engagement.

From mechanism to management

Throughout, the text emphasizes identification methods, transmission and epidemiology, pathogenesis, clinical features, laboratory diagnosis, treatment, prevention, and control, mapping closely to CBME competencies on specimen selection/transport, test interpretation, and infection control procedures essential for clinical safety and decision-making. This integration echoes WHO-aligned training domains that encourage diagnostic stewardship and stewardship-informed prescribing as pillars against antimicrobial resistance.

Pedagogy and presentation

The tone is pragmatic and didactic, with succinct explanations and figures calibrated for first-pass comprehension of dense material, a feature that typically improves retention during exam preparation and early clinical application when combined with structured sessions and DOAP (Demonstrate, Observe, Assist, Perform) formats in CBME timetables. Minor production issues—such as font size and figure clarity—appear to be publishing-dependent variables rather than content limitations, and do not detract from the curricular alignment and usability of the text.

Focus on Antimicrobial resistance

The book's stated attention to recent advances, especially AMR and "superbugs" that aligns with national outcomes requiring knowledge of AMR containment, stewardship, and hospital infection control, thereby reinforcing the broader One Health and surveillance-aware approach recommended by WHO frameworks for health worker education. Embedding these priorities within practical microbiology chapters supports competency in rational antimicrobial use and diagnostic stewardship, increasingly emphasized since the COVID-19 era.

Areas for enhancement

To strengthen learning impact, explicit learning objectives and end-of-chapter SBA/MCQ items could be added to consolidate knowledge and exam readiness in line with review-style pedagogy seen in test-oriented resources without sacrificing depth. Further, standardized checklists for specimen collection, biosafety notes, and algorithmic diagnostic pathways for syndromes like sepsis, meningitis, and respiratory infections would further operationalize CBME mandates on specimen handling, IPC, and rapid, protocolized diagnostics.

Recommendation

Overall, this book appears well-suited as a primary text for undergraduate medical students. Its comprehensive yet streamlined coverage, practical orientation, and contemporary updates make it a strong addition to the medical microbiology and immunology bookshelf. It is moderately to highly useful as a quick reference for postgraduate clinical microbiology, especially for refreshing fundamentals, practical workflows, and core diagnostic reasoning at the bench and bedside. The

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